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(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Portioning Arrangement for a Detergent Dispenser

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(57) 20 Claims

Notice: This application is as filed and may therefore contain an incomplete specification.



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ABSTRACT

2 A dishwasher includes a portioning arrangement for the
3 program-controlled delivery of cleaning agents in tablet
4 form (3, 3'). The portioning arrangement includes a
5 storage unit (1) for storing the cleaning agent tablets (3,
6 3'), a separating device (15) for removing at least one
7 cleaning tablet (3; 3') from the storage unit (1), and a
8 lock chamber (17). The lock chamber (17) separates the
9 cleaning agent tablets (3, 3') stored in the storage unit
10 (1) from the damp ambient conditions of a washing chamber.
11 A specific number of the cleaning agent tablets (3, 3') can
12 be removed and delivered to the lock chamber (17) and then
13 to the washing chamber. Preferably the cleaning agent
14 tablets (3, 3') are stored in the storage unit (1) in
15 several stacks in order to obtain a space-saving storage
16 unit of cleaning agents (3, 3') for the largest possible
17 number of washing cycles.

2189115

1 PORTIONING ARRANGEMENT FOR A DETERGENT DISPENSER

2 BACKGROUND OF THE INVENTION

3 The invention concerns a portioning arrangement for
4 controlled delivery of cleaning agents in tablet form in a
5 dishwasher.

6 German Patent Application P 44 13 870.9 proposes a
7 portioning arrangement for adding a cleaning agent to
8 dishwasher. Such an arrangement has a storage unit for
9 storing the cleaning agent tablets and a portioning
10 arrangement for separating the cleaning agent tablets and
11 for the program-controlled gradual release thereof. This
12 above-mentioned arrangement slows the connection of the
13 portioning arrangement with a control unit as well as the
14 power supply.

15 SUMMARY OF THE INVENTION

16 The task of the present invention is to specify a
17 particularly simple design of the portioning arrangement
18 for cleaning agent tablets and create an almost complete
19 separation of the stored cleaner tablets from the wash
20 chamber and the moist atmosphere prevailing in the wash
21 chamber during operation.

22 The portioning arrangement includes a storage unit, a
23 separating unit, and a lock chamber. A specific number of
24 cleaning agent tablets can be removed from the storage unit
25 and supplied to the lock chamber and then to a washing
26 chamber. Cleaning agent tablets for several washing cycles
27 can be stored with nearly complete separation from the
28 moist atmosphere of the washing chamber and supplied to the
29 washing liquid under control of a wash program.

30 The portioning arrangement for cleaning agents in
31 tablet form essentially includes a storage unit for storing
32 cleaning agent tablets for several wash cycles and a

2189115

1 separating device. According to the washing process, the
2 separating device removes at least one cleaning tablet from
3 the storage unit, and feeds it to a lock chamber also
4 included in the portioning arrangement. Preferably the
5 portioning device also has a presenting unit into which the
6 cleaning tablets are brought after passing through the lock
7 chamber.

8 The storage unit includes a receiving device. After a
9 supply container including this receiving device is opened,
10 which preferably takes place from above by removing a
11 cover, the cleaning agent tablets are manually filled into
12 the receiving device.

13 Preferably the complete portioning arrangement of the
14 dishwasher is removable, which facilitates filling,
15 cleaning, and maintenance. The storage unit of the
16 portioning device may be removed for especially simple
17 filling.

18 An arrangement of at least two stacks, preferably
19 three or four, is favorable for the storage of tablets for
20 several wash cycles, advantageously at least ten wash
21 cycles. The stacks may be in any position: standing,
22 lying, or slanting.

23 A preferred design of the storage unit provides for a
24 rotation-symmetrical arrangement of the stacks in a drum
25 storage, which is designed so as to rotate around an axis
26 parallel to the stack axis. A storage unit of this kind is
27 thus designed as a kind of revolving drum.

28 In the case of a vertically oriented arrangement of
29 the storage unit, the stacks in each case are fastened in
30 position by a fixed element and a movably mounted element
31 for fixing the tablets against movement in the transverse
32 direction. In each case the tablets are removed from any
33 stack by means of the separating device according to a
34 program control.

35 A preferred design of the separating device consists
36 of a pusher, which in the case of each separating process
37 advances a tablet from the stack approximately in the

1 radial direction. As an alternative to this, the
2 separating device also may be a gripper or tongs.

3 The tablet removed then is delivered to a lock
4 chamber, which serves for the nearly complete separation of
5 the storage unit from the moist atmosphere in the washing
6 tank. After passing through this lock chamber the tablet
7 is fed to a perforated platform or a perforated basket.
8 This platform or basket is placed in the washing tank in
9 such a way that the tablets contained therein are dissolved
10 by the washing liquid, preferably by a spray jet striking
11 the tablets.

12 For the case where more than one tablet is to be
13 portioned per wash cycle, either the tablets are portioned
14 one after the other in the way described above, or pass
15 through the lock chamber together, after sequential
16 separations, and are presented together.

17 The invention is explained in greater detail below by
18 means of the drawings of a specific embodiment.

19 BRIEF DESCRIPTION OF THE DRAWINGS

20 Fig. 1 shows a schematic side elevation of a
21 portioning device according to the invention;

22 Fig. 2 shows a side view of a storage unit for
23 multiple stacks of cleaning tablets with a separating
24 device;

25 Fig. 3 shows a top view of a storage unit for four
26 tablet stacks; and

27 Fig. 4 shows a longitudinal section of a lock
28 chamber.

29 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

30 Referring to Figs. 1 through 3, portioning arrangement
31 for disposing large cleaning agent tablets 3 or small
32 cleaning agent tablets 3' in a dishwasher includes a drum-
33 like storage unit 1 for storing the cleaning agent tablets

2189115

1 3, 3' in four standing stacks. This storage unit 1, can be
2 filled manually from above by removing a cover 5, which
3 creates a gas-tight sealing of the storage unit 1 by means
4 of a sealing element 7. The individual stacks are fixed in
5 the transverse direction by means of a fixed V-shaped
6 element 9 and a movably mounted element 11. The fixed
7 element 9 shown has two orthogonal parts. The movably
8 mounted element 11 is biased toward the tablets 3, 3'.
9 This holding mechanism is designed in such a way that it is
10 operable irrespective of the size of the tablets 3, 3'.

11 The entire storage unit 1 is capable of rotating
12 around its middle axis 13. The process of separating a
13 cleaning tablet 3, 3' is initiated by a rotation motion of
14 the storage unit 1 around the middle axis 13, so that the
15 stack, from which the tablet 3, 3' is to be removed, is
16 positioned so that the tablet 3, 3' to be portioned is
17 accessible to a separating device 15.

18 The tablet 3, 3' then is separated by moving it from
19 the appropriate stack in an approximately radial direction
20 by means of the separating device 15 designed as a pusher.
21 The movement can be either on a linear track or a bent
22 track.

23 The tablet 3, 3' provided is brought into a lock
24 chamber 17 having closable lower and upper lock walls 19,
25 21. With the lower lock wall 19 in a closed position, the
26 upper lock wall 21 opens to admit the tablet and is
27 resealed gas-tight after the introduction of the cleaning
28 agent tablet 3, 3'. As shown in Fig. 4, preferably at
29 least the upper lock wall 21 passes along a bent track 23
30 in a closing motion to a countersurface 25. This prevents
31 faulty gripping of a gasket 27 mounted on the
32 countersurface 25, which can occur and lead to leakages of
33 the gasket 17 when using an alternatively possible sliding
34 motion, between the gasket 27 and sealing surfaces.

35 Only after the sure sealing of the upper lock wall 21
36 is the lower lock wall 19 opened and the cleaning agent
37 tablet 3, 3' advanced. The tablet 3, 3' in this way

2189115

1 finally enters a perforated basket 29 in the wash chamber
2 and at this point is struck periodically by a spray jet
3 cleaning the material to be washed. In this way the tablet
4 3, 3' is dissolved gradually, by means of which the
5 cleaning substance is mixed with the washing liquid.

6 The embodiment of the invention shown and described
7 are exemplary. Modifications are considered to be within
8 the scope of the claims.

2189115

CLAIMS

WHAT IS CLAIMED IS:

- 1 1. A portioning arrangement for dispensing cleaning
2 agents in tablet form for a washer having a wash chamber
3 characterized by the fact that the portioning arrangement
4 includes a storage unit (1), a separating device (15), and
5 a lock chamber (17), arranged so that a specific number of
6 the cleaning agent tablets (3, 3') can be removed from the
7 storage unit (1) by the separating device (15) and
8 delivered to the lock chamber (17) and then to the washing
9 chamber.
- 1 2. A portioning arrangement in accordance with
2 Claim 1, characterized by the fact that the tablets (3, 3')
3 are stored in the storage unit (1) in at least two stacks.
- 1 3. A portioning arrangement in accordance with Claim
2 2, characterized by the fact that the tablets (3, 3') are
3 stored in the storage unit (1) in approximately vertically
4 arranged stacks parallel to one another.
- 1 4. A portioning arrangement in accordance with
2 Claim 2, characterized by the fact that the storage unit
3 (1) comprises a drum storage.
- 1 5. A portioning arrangement in accordance with
2 Claim 4, characterized by the fact that the storage unit
3 (1) is adapted for rotating around an axis (13) parallel
4 to an axis of one of the stacks.
- 1 6. A portioning arrangement in accordance with Claim
2 2 further comprising fixed elements and movably mounted
3 elements for fixing the respective tablet stacks against
4 transverse movement in the storage unit.

1 7. A portioning arrangement in accordance with Claim
2 2, further comprising a holding mechanism for fixing each
3 stack against movement in the transverse direction, the
4 holding mechanism including a V-shaped groove (9) and a
5 moveable pressing element (11).

1 8. A portioning arrangement in accordance with Claim
2 7, characterized by the fact that the holding mechanism is
3 operative irrespective of the size of the tablets (3, 3').

1 9. A portioning arrangement in accordance with Claim
2 2, characterized by the fact that at least one tablet (3,
3 3') per wash cycle can be removed from any stack of the
4 storage unit (1) by means of the separating device (15) and
5 delivered to the lock chamber (17).

1 10. A portioning arrangement in accordance with Claim
2 9, characterized by the fact that the separating device
3 (15) comprises a pusher that removes a tablet (3, 3') from
4 a stack in an approximately radial direction.

1 11. A portioning arrangement in accordance with Claim
2 9, characterized by the fact that the separating device
3 (15) is designed as a gripper.

1 12. A portioning arrangement in accordance with Claim
2 1, characterized by the fact that the lock chamber includes
3 a lock wall (21) sealing the storage unit (1), wherein the
4 lock wall (21) passes along a bent track (23) during
5 opening and closing.

1 13. A portioning arrangement in accordance with Claim
2 1, characterized by the fact that the tablets (3, 3') to be
3 portioned are dispensed from the lock chamber to a
4 perforated basket (29) exposed to washing liquid in the
5 wash chamber.

1 14. A portioning arrangement in accordance with Claim
2 1, characterized by the fact that the storage unit (1) can
3 be removed from the portioning device.

1 15. A portioning arrangement in accordance with Claim
2 2, characterized by the fact that the tablets (3, 3') are
3 stored in the storage unit (1) in approximately
4 horizontally arranged stacks parallel to one another.

1 16. A portioning arrangement in accordance with
2 Claim 3, characterized by the fact that the storage unit
3 (1) comprises a drum storage.

1 17. A portioning arrangement in accordance with
2 Claim 15, characterized by the fact that the storage unit
3 (1) comprises a drum storage.

1 18. A portioning arrangement in accordance with
2 Claim 16, characterized by the fact that the storage unit
3 (1) is adapted for rotating around an axis (13) parallel
4 to an axis of one of the stacks.

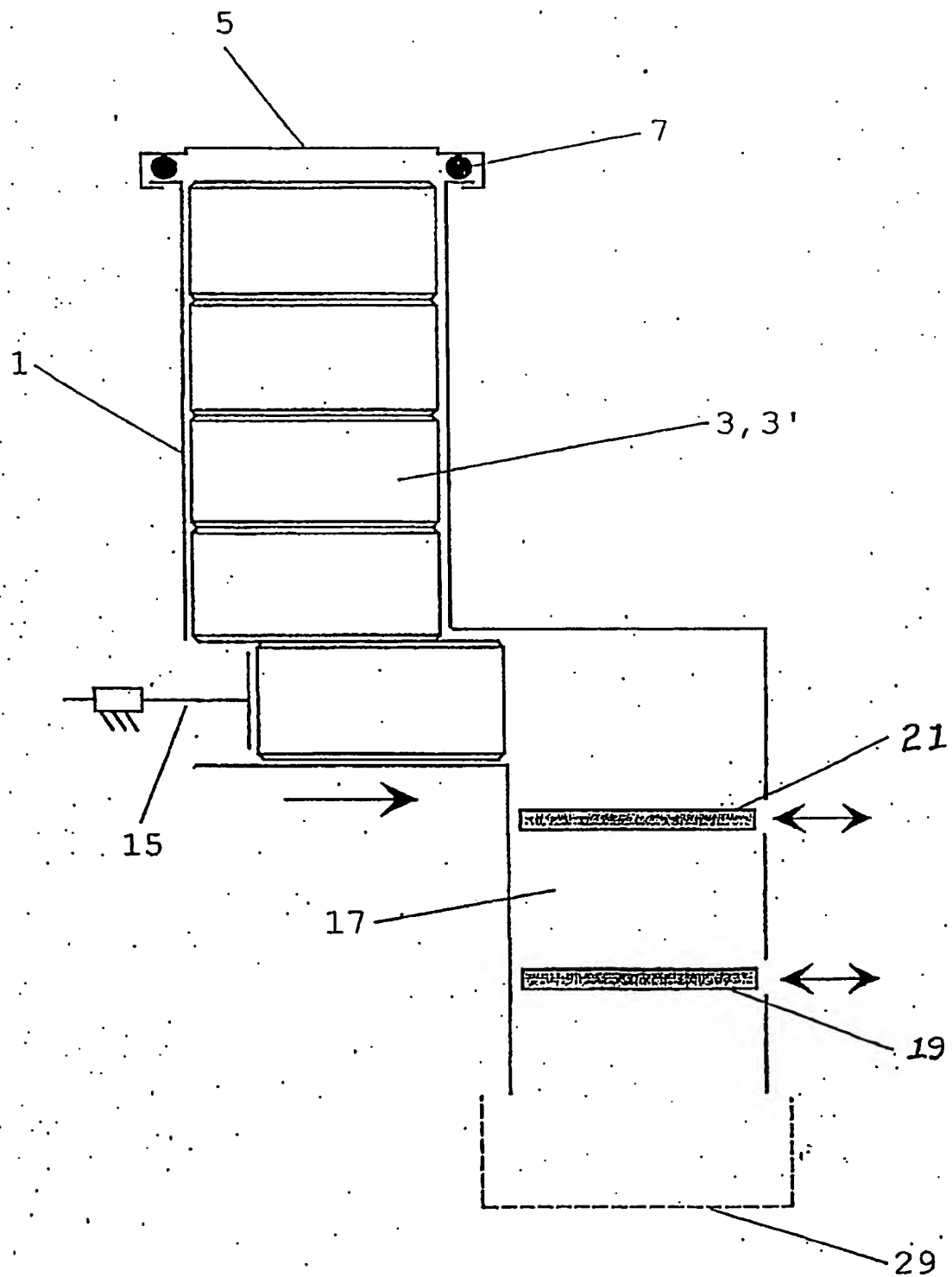
1 19. A portioning arrangement in accordance with
2 Claim 17, characterized by the fact that the storage unit
3 (1) is adapted for rotating around an axis (13) parallel
4 to an axis of one of the stacks.

1 20. A portioning arrangement in accordance with Claim
2 6, characterized by the fact that the holding mechanism is
3 operative irrespective of the size of the tablets (3, 3').

2189115

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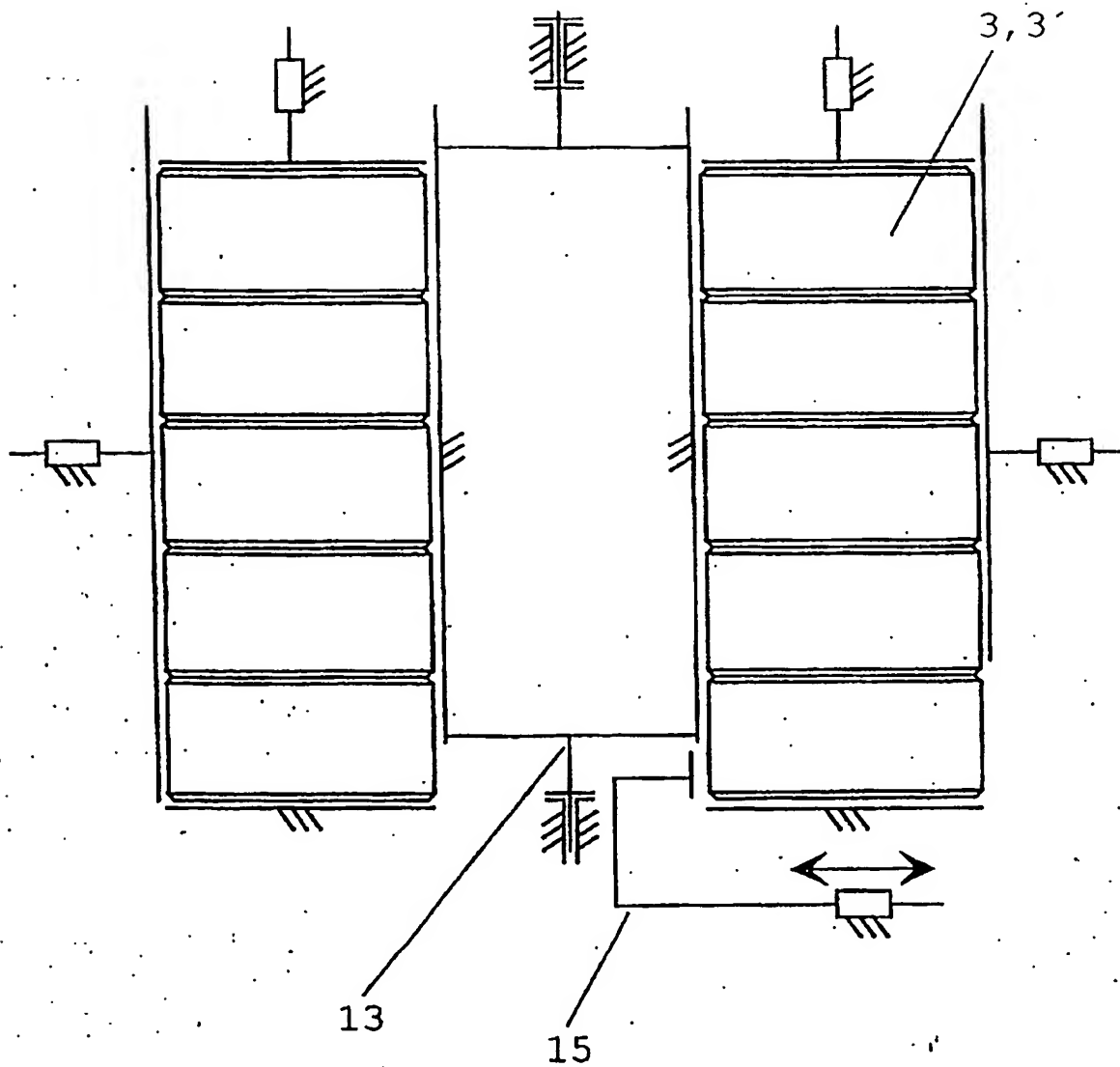
Fig. 1



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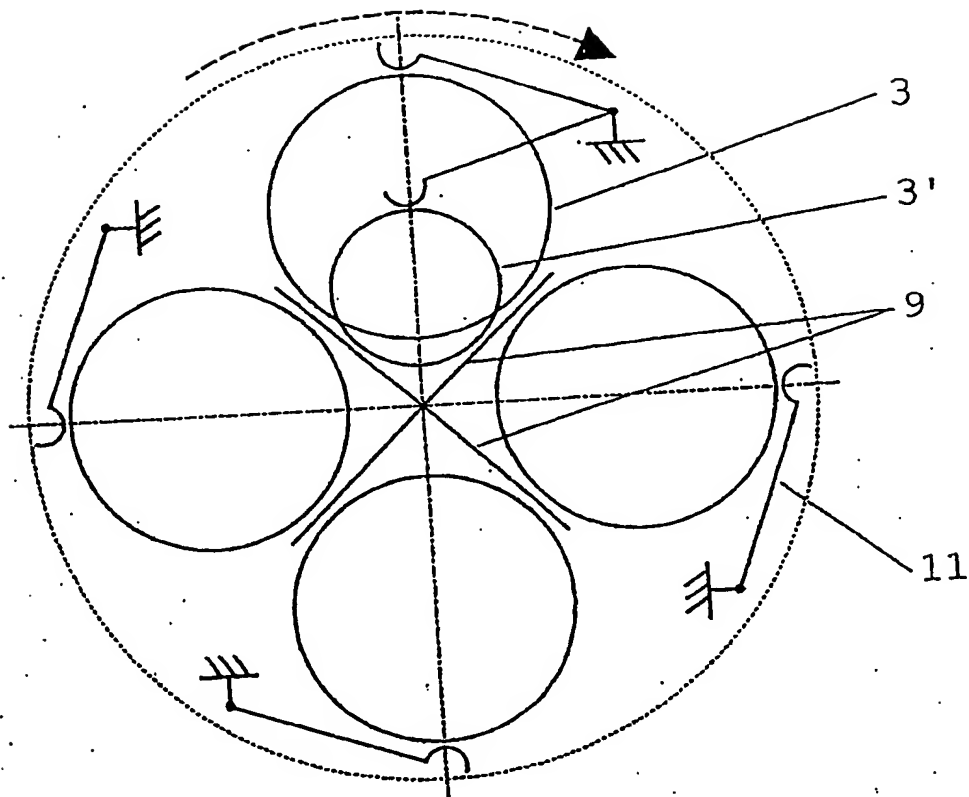
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Fig. 2



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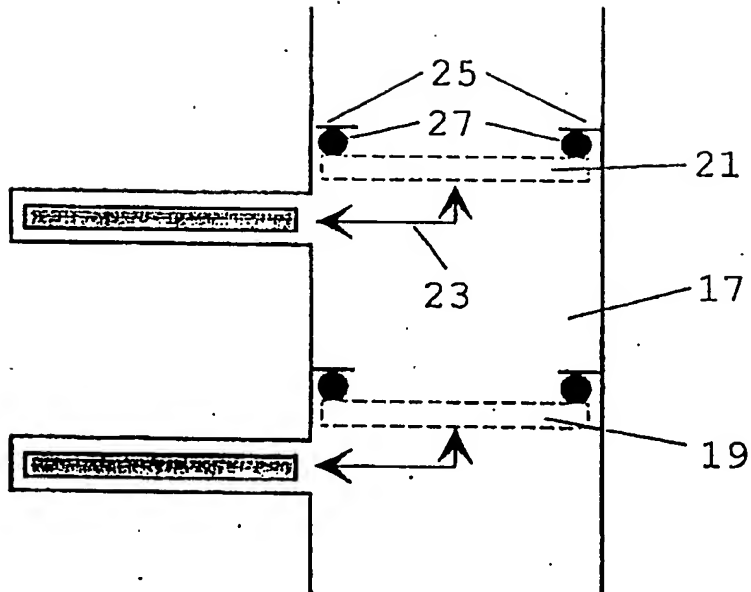
Fig. 3



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Fig. 4



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